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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/033,338 | 12/28/2001 | Sridhar Gollamudi | 5-20 | 7159 |

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Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
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| EXAMINER | |
|---|---|
| AGHDAM, FRESHTEH N | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2631 | |

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/033,338 | GOLLAMUDI ET AL. | |
| | Examiner | Art Unit | |
| | Freshteh N. Aghdam | 2631 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,7,10-13 and 16-20* is/are rejected.

7)☒ Claim(s) *3,5,6,8,9,14 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 07/14/2005 have been fully considered but they are not persuasive.

**Applicant's Arguments:** In page 7, lines 6-24, with regards to claims 1, 16, and 19, applicant argues that the claimed subject matter is not taught or suggested by Razavilar, (First "adjusting a first channel condition threshold ... using a first variable step" and second "wherein the first channel condition threshold is based on a first modulation and coding scheme (MCS) level used in the first data packet transmission")

Examiner Response: In page 7, lines 13-14, first, applicant indicates "Razavilar does disclose a variable step size." Razavilar teaches adjusting a first channel condition threshold (target channel condition) by a variable step size (+ and/or – a step size; figure 6, steps 612 and 614). Second, Razavilar teaches that the channel condition threshold corresponds to the MCS level (Par. 72; BPSK, QPSK rate ½, QPSK rate ¾, 16 QAM rate ½, ...) used in the data packet transmission (Par. 72-73).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims1, 16, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Razavilar et al (US Pub. 2003/0104831).

As to claims 1, 16, and 19, Razavilar et al teaches an adaptive quality control loop for a rate adaptation based on modulation and coding scheme (MCS) levels and multiple spreading codes comprising adjusting the nth iteration channel condition threshold 412 based on the nth iteration error detection result 410 for the nth iteration data packet transmission between a transmitter and a receiver 620 using the nth variable step 612 and 614 responsive to the error detection portion, wherein the nth channel condition threshold is associated with the nth modulation and coding scheme level used in the first data packet transmission (Fig. 4 and 6; Pg. 8, Par. 72, 73, 77, and 79).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al, and further in view of Shibutani (US Pub. 2002/0193133).

As to claim 2, Razavilar et al teach all the subject matters claimed above, except for the step of adjusting the first channel condition threshold comprising of determining the first variable step by using a desired MCS (i.e. Modulation and Coding Scheme) error rate for the first MCS level. Shibutani, in the same field of endeavor, teaches determining the maximum data rate corresponding to the given error performance of the received signal for a specific MCS level (Fig. 4, Pg. 5, Par. 50). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Shibutani with Razavilar et al in order to achieve maximum data throughput (Pg. 5, Par. 50).

As to claim 7, Razavilar et al teach all the subject matters claimed above, except for the desired MCS error rate of the first MCS level being based on a bit error rate target criterion. Shibutani, in the same field of endeavor, teaches using bit error rate as a given error performance received for a specific MCS level to determine the maximum data rate.

Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al and Shibutani, further in view of Sindhushayana et al (US Pub. 2004/0202196).

As to claim 4, Razavilar et al and Shibutani teach all the subject matters as recited in claims 1 and 2 above, except for the desired MCS error rate of the first MCS level being based on a block error rate target criterion. Sindhushayana et al, in the same field of endeavor, teach the desired MCS error rate for a certain MCS level is based on a packet error rate (i.e. PER) target criterion (Fig. 3; Pg. 4, Par. 41, 42, 43, 44, 45, and 47). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Sindhushayana et al with Razavilar et al and Shibutani for adaptive rate selection in a wireless communication system (Pg. 2, Par. 22).

As to claim 7, Razavilar et al and Shibutani teach all the subject matters as recited in claims 1 and 2 above, except for the desired MCS error rate of the first MCS level being based on a bit error rate target criterion. Sindhushayana et al, in the same field of endeavor, teach the desired MCS error rate for a certain MCS level is based on a packet error rate (i.e. PER) target criterion (Fig. 3; Pg. 4, Par. 41, 42, 43, 44, 45, and 47). One of ordinary skill in the art would clearly recognize to use the bit error rate target criterion as an error performance.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al, and further in view of Sindhushayana et al.

As to claim 10, Razavilar et al teach all the subject matters as recited in claims 1 and 2 above, except for the step of adjusting the first channel condition threshold

comprises of determining the first variable step using a block or bit error rate target criterion and a first data rate associated with the first MCS level. Sindhushayana et al, in the same field of endeavor, teach the desired MCS error rate for a certain MCS level is based on a packet error rate (i.e. PER) target criterion (Fig. 3; Pg. 4, Par. 41, 42, 43, 44, 45, and 47). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Sindhushayana et al with Razavilar et al and Shibutani for adaptive rate selection in a wireless communication system (Pg. 2, Par. 22).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al, and further in view of Engstrom et al (US Patent 6,639,934).

Razavilar et al teach all the subject matters as recited in claim 1 above, except for the first variable step is associated with a first variable up step and a first variable down step, the first channel condition threshold being increased an amount based on the first variable up step if the first error detection result indicates the first data transmission was unsuccessful, the first channel condition threshold being decreased an amount based on the first variable down step if the first error detection resulf indicates the first data transmission was successful. Engstrom et al, in the same field of endeavor, teach an adaptive quality control loop wherein if the frame error detector 302 determines that a frame error has occurred, the proposed channel condition threshold adjustment value is increased by K times delta and if the frame error detector 302 determines that a frame error has not occurred, the proposed channel condition threshold adjustment value is decreased to –delta (Fig. 7; Col. 6, Lines 38-48). Therefore, it would have been obvious to one of ordinary skill in the art to combine the

teaching of Razavilar et al with Engstrom et al in order to increase the adaptation rate of an outer power control loop without the risk of unbounded oscillations in the SIR target due to transmitter power limitations (Col. 3, Lines 4-7).

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al and Engstrom et al, further in view of Sindhushayana et al.

As to claim 12, Razavilar et al and Engstrom et al teach all the subject matters claimed above, except for a block error rate target criterion, the first channel condition is adjusted an amount equal to the first variable step up if the first error detection result indicates the first data transmission was unsuccessful and the first channel condition is adjusted an amount equal to the first variable down step if the first error detection result indicates the first data transmission was successful. Sindhushayana et al, in the same field of endeavor, teach adjusting the channel condition threshold value based on the result of the packet error rate target criterion (Fig. 3; Pg. 4, Par. 41, 42, 43, 44, 45, and 47). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Sindhushayana et al with Razavilar et al and Engstrom et al for adaptive rate selection in a wireless communication system (Pg. 2, Par. 22).

As to claim 13, As to claim 12, Razavilar et al and Engstrom et al teach all the subject matters claimed above, except for a bit error rate target criterion, the first channel condition is adjusted an amount equal to the first variable step up if the first error detection result indicates the first data transmission was unsuccessful and the first channel condition is adjusted an amount equal to the first variable down step if the first error detection result indicates the first data transmission was successful.

Sindhushayana et al, in the same field of endeavor, teach adjusting the channel condition threshold value based on the result of the packet error rate target criterion (Fig. 3; Pg. 4, Par. 41, 42, 43, 44, 45, and 47). One of ordinary skill in the art would clearly recognize that instead of block error rate target criterion, the bit error rate targent criterion could be computed and used for the same purpose.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al, and further in view of Shibutani.

As to claim 17, Razavilar et al teach all the subject matters as recited in claim 1, except for the selecting a second MCS level based on an estimation of channel condition between the receiver and transmitter using a table having the adjusted first channel condition threshold. Shibutani, in the same field of endeavor, teaches selecting MCS levels based on the corresponding adjusted channel conditions (table 2; Pg. 5, Par. 50). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teaching of Shibutani with Razavilar et al in order to convert the received channel condition information into a data rate (Pg. 5, Par. 50).

As to claim 18, Razavilar et al teach all the subject matters as recited in claim 1, except for transmitting a second data packet using the second MCS level. Shibutani, in the same field of endeavor, teaches transmitting different data packets using different MCS levels based on the channel condition information (Pg. 5, Par. 50).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Razavilar et al.

As to claim 20, Razavilar et al teach all the subject matters as recited in claim 1, except for the second channel condition threshold by a second amount equal to a first amount at which the first channel condition threshold was adjusted. One of ordinary skill in the art would clearly recognize that since the channel condition threshold adjustment value is responsive to the result of the received frame error detection, the second channel condition adjustment value could be equal to the first channel condition threshold adjustment value.

***Allowable Subject Matter***

Claims 3, 5, 6, 8, 9, 14, and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 3, the prior art of record fails to teach an adaptive quality control loop wherein the step of determining the first variable step comprises the step of updating MCS probabilities for all MCS levels using the first error detection result; updating an MCS error rate for the first MCS level; and determining a ratio between a first variable up step and a first variable down step associated with the first variable step using the updated MCS probabilities, MCS error rate and a target criterion.

As to claim 5, the prior art of record fails to teach an adaptive quality control loop wherein the desired MCS error rate for the first MCS level is based on a block error rate target criterion, MCS probabilities for the first MCS level and for other MCS levels, and MCS error rate for the other MCS levels.

As to claim 6, the prior art of record fails to teach an adaptive quality control loop by solving the equation as recited in the claim.

As to claim 8, the prior art of record fails to teach an adaptive quality control loop wherein the desired MCS error rate for the first MCS level is based on a block error rate target criterion, MCS probabilities for the first MCS level and for other MCS levels, average transmitted data rates for the first MCS level and for the other MCS levels, average rate of bit errors for the other MCS levels, and MCS error rates for the other MCS levels.

As to claim 6, the prior art of record fails to teach an adaptive quality control loop by solving the equation as recited in the claim.

As to claim 14, the prior art of record fails to teach the limitations for an adaptive quality loop as recited in the claim.

As to claim 15, the prior art of record fails to teach an adaptive quality control loop wherein a ratio between the first variable up step and the first variable down step are based on a desired MCS error rate for the first MCS level.

## *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Engstrom et al (US 6,639,934).

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Freshteh N. Aghdam whose telephone number is (571) 272-6037. The examiner can normally be reached on Monday through Friday 9:00-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Freshteh Aghdam

September 21, 2005

KEVIN BURD
PRIMARY EXAMINER